THE INSTITUTE OF PHYSICS

47, BELGRAVE SQUARE, LONDON, S.W.1.

BULLETIN

No. 1 — *Information in this circular is not intended for general publication; your copy should not therefore be passed to a library.* — JANUARY 1950

DIARY OF INSTITUTE MEETINGS

Members may bring guests to any of the meetings listed below unless otherwise indicated.

January 11th (Scottish Branch and the Institution of Electrical Engineers). 7.0 p.m. at Heriot-Watt College, Edinburgh.
Mr. G. T. Winch, "The Measurement of Light and Colour."

January 12th (Stress Analysis Group). 6.0 p.m. in the Photoelastic Laboratory, Engineering Department, University College, Gower Street, W.C.1.
An informal discussion introduced by **Col. H. T. Jessop, "Compensator Methods of Measurement of Relative Retardation in Thin Sections of Photoelastic Models."**

January 17th (Electronics Group). 5.30 p.m. at the Institute's House, 47 Belgrave Square, S.W.1.
Dr. K. D. C. MacDonald, "Fluctuations Noise and Recent Developments."

January 18th (London and Home Counties Branch). 5.30 p.m. at the Institute's House, 47 Belgrave Square, S.W.1.
Mr. E. W. Golding, "Windmills as Electrical Power Generators."

January 19th (Electronics Group and Midland Branch). 5.30 p.m. at the University of Birmingham, Edmund Street.
Mr. D. A. Wright, "Thermionic Emitters."

January 20th (Manchester and District Branch). 7.0 p.m. in the New Physics Theatre of the University of Manchester.
Mr. J. A. Hall, "Temperature Measurement."

January 24th (Scottish Branch). 7.0 p.m. at the Natural Philosophy Department of the University of Edinburgh, Drummond Street.
Professor S. Piggott, "Science and Archaeology."

January 28th (South Wales Branch). 2.0 p.m. at the University College, Cardiff.
Mr. W. H. Walton, "Physics in the Mining Industry."

February 2nd, 3rd, 4th (Education Group). At the Institute's House, 47 Belgrave Square, S.W.1.
Conference on **"Physics in Schools." Admission by ticket only.**

February 7th (Industrial Spectroscopy Group). 6.0 p.m. at the Institute's House, 47 Belgrave Square, S.W.1.
Dr. A. C. Menzies, "Spectroscopy in the U.S.A."

February 7th (Scottish Branch). 7.0 p.m. at the Natural Philosophy Department of the University of Edinburgh, Drummond Street.
Mr. W. B. Hislop, "Some Physical Problems in the Production of Illustrations."

February 8th (North-Eastern Branch). 7.0 p.m. in the Museum Room of the Technical College, Sunderland.
Mr. P. L. Kirby, "Electrical Conduction in Glass."

February 9th (Stress Analysis Group). 6.0 p.m. at the Institute's House, 47 Belgrave Square, London, S.W.1.
Informal discussion on **"The Weatherproofing and Cementing of Electric Resistance Strain Gauges."**

February 14th (Electronics Group). 5.30 p.m. at the Institute's House, 47 Belgrave Square, S.W.1.
Dr. G. H. Metson, "The Vacuum Factor of the Oxide-Cathode Valve."

February 17th (Industrial Spectroscopy Group). 10.0 a.m. at the University of Sheffield.
Symposium on **"Calibration Line Drift in Routine Spectrochemical Analysis."**

February 17th (Manchester and District Branch). 7.0 p.m. in the New Physics Theatre of the University of Manchester.
Dr. F. A. Vick, "Musical Acoustics."

FOREWORD

The *Bulletin* of the Institute, which now makes its first appearance, has grown out of *Notes and Notices*, which was begun in 1941 as an irregular publication primarily intended to acquaint members with important professional issues, particularly those arising from the circumstances of the war. The *Bulletin* will be published monthly, and the various features of *Notes and Notices*—elections to membership, proceedings of the Board, changes of appointment, honours conferred upon members, and announcements of professional interest—will be continued in it. In addition, notices of Institute meetings, details of post-graduate or other special courses of interest to physicists and items of the type which have previously been mentioned in the "Notes and Comments" and "Reports and Official Publications" sections of the *Journal of Scientific Instruments* will be included. It is hoped, also, that it will be possible to create for the *Bulletin* a rather less formal tone than was inevitably characteristic of *Notes and Notices*; contributions from members will be welcomed in the form of items of correspondence or short notes on topics which may be expected to interest other members of the Institute.

"It is essential for men of science to take an interest in the administration of their own affairs or else the professional civil servant will step in—and then Lord help you!"

LORD RUTHERFORD.

INSTITUTE NEWS

Proceedings of the Board

The Board met on November 17th, the President in the Chair. In addition to formal business and to matters referred to elsewhere in this Bulletin, the following items were dealt with:

1950 Budget.—The Treasurer submitted the report of the Finance Committee which included a statement of the current financial position. It appeared that it might not be necessary to sell still more investments as had at one time seemed inevitable.

In estimating income and expenditure for 1950 the Finance Committee had endeavoured to make the maximum provision for the future and to begin to build up adequate reserves. The income for 1950 was estimated at £27 300, exclusive of a contribution of £2 100 from the Endowment Trust Fund. This contribution covers certain specific items such as grants to Branches and Groups and educational work, which were mentioned in the appeal to industry to which the fund was a response.

Expenditure for the year was estimated at £26 450, and this sum was authorized by the Board. There is therefore an estimated surplus of £2 950 which should be available for placing to reserve. Members will remember that among the reasons for the recent increase in subscriptions was the need to establish better reserves as soon as possible. It is proposed during 1950 to take out a capital redemption policy to provide an adequate sum for the acquisition of premises when the lease of the present House expires in 1983; an annual premium of about £1 500 has been agreed to.

Paul Instrument Fund.—Sir Frank Smith (*Past President*) was re-appointed to represent the Institute on the Paul Instrument Fund Committee of the Royal Society.

Ministry of Labour Advisory Committee on Physics.—The Institute representatives on the Physics Advisory Committee of the Ministry of Labour (Appointments Department), the President and the Secretary, sought the views of the Board on items on the agenda of the forthcoming meeting of the Committee.

Deputy Secretary

Owing to the continued growth of the work at the Headquarters of the Institute the Board has created the post of Deputy Secretary, and has appointed Mr. N. Clarke to it. Mr. Clarke has been the Assistant Secretary since 1945.

Appointments Register

The Board has recently agreed to a modification of the method of working of the Institute's Appointments Register. In the past, Members, Graduates and Students who were seeking posts or were interested in a change of post could place their names on the Register and supply information likely to be of interest to a prospective employer; lists of vacancies, some notified to the Institute direct and others taken from the Press, have been circulated at irregular intervals to those on the Register. This procedure was begun prior to the war when the position of physicists seeking posts was quite different from that which exists now. For some time it has been felt that, in the changed circumstances and with the additional channels now available for the notification of vacancies, some modification and simplification of operation of the Institute's Register could be effected. Accordingly, duplicated lists of vacancies will no longer be circulated. Firms whose notices have previously been included in the lists have been informed that space in the Institute's Bulletin will be made available for advertisements of vacancies for professional physicists. Members and others seeking staff are invited to make use of this facility and to submit advertisements. Charges are nominal.

The Officers are anxious to assure members that advice and information about posts will, as before, be available whenever required. Those wishing to obtain advice in any matter concerning posts, conditions of service or salaries are invited to consult the Secretary or Deputy Secretary; Students, in particular, may wish to have information about the prospects and opportunities of various branches of the profession.

Employers, also, are invited to consult the Officers about salaries and conditions considered appropriate for a particular post.

Remission of Subscriptions of Members of long standing

Members over sixty-five years of age who have been Members continuously for at least twenty years are reminded that they may, if they so wish, have their future annual subscriptions remitted. If they elect to do this, however, they are then only entitled to the Institute's publications upon the same special terms as are current for Students, which at present means the receipt of the *Journal of Scientific Instruments* or the *British Journal of Applied Physics* for one guinea a year each.

The Teaching of Mathematics

The Board continues to be concerned about improvements in the teaching of mathematics to physicists, upon which the Institute and the Mathematical Association issued a Joint Report in 1944. A letter of enquiry has recently been sent by the Institute to Professors of Physics and Professors of Mathematics in the Universities and the Heads of Departments in a number of Technical Colleges, and views are sought upon the recommendations contained in the Report and also upon difficulties which might have been observed in attempting imple-

mentation. A summary of the replies is being prepared for presentation to the Board.

Institute Handbook

Copies of the new Handbook, containing the revised regulations for Fellowship and Associateship and the requirements for the new grade of Graduate, are available on request from the Secretary. Members are asked to satisfy themselves, when requested to sign proposal forms, that candidates appear to comply with the new regulations and, in particular, with the new minimum age requirements.

The explanatory paragraphs of the Handbook indicating the type of experience required for Fellowship and Associateship make clear that applications for these grades will be equally welcome from candidates having industrial or other responsible experience and those having experience in academic research. Teachers of physics in schools and colleges who are engaged in work of a sufficiently advanced nature are eligible for election to Associateship on the basis of their responsibility and competence as teachers of physics without any requirement of part-time research or other experience.

BRANCH AND GROUP ACTIVITIES

Australian Branch Conference on X-rays in Industry

The Australian Branch of the Institute held a three-day conference on "X-Rays in Industry," in Melbourne on 9th–11th November, 1949. Seventeen papers were given and the subject-matter was divided into the broad divisions of Modern X-Ray Equipment and Techniques, Industrial Radiography and Special Research Applications. The President of the Institute, Dr. Toy, sent a message to Dr. F. W. G. White, Chairman of the Victoria Division of the Branch, conveying the best wishes of the Board for a successful conference.

Scottish Branch: Members' Course

The Committee of the Scottish Branch of the Institute has arranged a course of lectures on Atomic Physics, attendance at which has, after the first lecture, been confined to members. The eighteen lectures are being given by Prof. P. I. Dee, Mr. J. R. Atkinson, Dr. W. MacFarlane and Dr. J. M. A. Lenihan. There was an attendance of two hundred people at the first lecture.

The Committee propose to arrange a course on electronics for next session.

Education Group

The Spring Conference of the Education Group will be devoted to the teaching of Physics in Schools. Among the topics on which papers are to be read are the requirements which Industry and the Universities might expect the schools to meet, physics as an element in a liberal education, the experimental approach to the teaching of physics, physics in girls' schools and physics in modern schools.

Details and forms of application to attend the Conference have already been circulated to the members of the Education Group. Accommodation is limited and it is clearly desirable to secure among those attending a balance of the various interests concerned. Attendance will be by ticket only.

Lectures on the Solid State

At the suggestion of the Midland Branches of the Institute of Physics and the Institution of Metallurgists, the University of Birmingham has arranged a course of 24 lectures under the general title "Modern Views of the Solid State." The course is intended for scientists working in industry and the lectures will take place on Saturday mornings commencing 14th January, 1950. The course will open with an introduction to wave mechanics to be given by Mr. F. R. N. Nabarro, and this will be followed by Mr. J. F. B. Randles on non-metallic solids and Mr. B. A. Bilby on metals and alloys.

Full particulars of the course may be obtained from the Director of the Extra Mural Department, University of Birmingham, Edmund Street, Birmingham 3.

Changes of Branch and Group Officers

The following changes have recently taken place in the Officers of the Institute's Branches and Groups:—

Australian Branch.—Dr. G. H. Briggs (*Fellow*) has been elected President of the Branch, Professor L. H. Martin (*Fellow*) Vice-President, Mr. A. J. Higgs (*Fellow*) Honorary Treasurer, and Mr. F. J. Lehany (*Fellow*) Honorary Secretary. Dr. Briggs has previously held the combined offices of Honorary Secretary/Treasurer.

Midland Branch.—Dr. D. Parkinson (*Fellow*) has succeeded Professor L. F. Bates (*Fellow*) as Chairman of the Branch. Dr. J. H. Nelson (*Associate*) has retired after being Honorary Secretary of the Branch since 1943 and has been succeeded by Mr. W. C. Hynd (*Associate*).

Industrial Radiology Group.—Mr. H. S. Tasker (*Associate*) has retired from the Joint Secretaryship of the Group and has been succeeded by Mr. P. Rowbotham (*Associate*).

OFFICIAL PUBLICATIONS

Future Demand for Physicists

The report of the Physicists' Sub-Committee of the Technical Personnel Committee of the Ministry of Labour and National Service on "Present and Future Supply and Demand for Persons with Professional Qualifications in Physics" has now been published by the Stationery Office. The price is 6d.

The Chairman of the Sub-Committee was Lord Hankey and among its members were Sir Lawrence Bragg (*Past President*), Dr. H. Lowery (*Fellow*), the late Sir Clifford Paterson (*Past President*), Professor A. M. Tyndall (*Past President*) and Sir Robert Watson-Watt (*Fellow*).

The summary of the Sub-Committee's report is as follows:

1. The annual output of physics graduates from the universities is about 750. In addition to honours students, this includes men taking physics as a main subject in a general, pass or ordinary degree. This figure is two or three times as great as the comparable pre-war figure, and the sizes of the physics schools show signs of increasing more in the next year or two.

2. About 870 physicists are required annually at present, but as far as can be seen the demand will not remain at this level. Estimates for the years 1951–55 show a requirement for 700 physicists per annum at the beginning of the period, decreasing to about 600.

3. At present, the output of physicists from the universities is not sufficient to satisfy all requirements. Our estimates for the next few years ahead, however, show that the annual demand is decreasing sufficiently for the supply to make up the deficit and meet all requirements.

4. Estimates for 1956 onwards indicate a further drop in annual demands, but we do not consider that great reliance should be placed on this. It is difficult for the organizations concerned to forecast their requirements so far ahead, and in addition the increasing realisation of the value of physicists in industry and the development of new devices may have a considerable effect.

5. The quantitative examination of the problem is, however, deceptive and there will be a shortage of good men even when the overall demand is numerically satisfied. On the other hand, less able men may have difficulty in finding posts.

6. The greater part of the demand is for school and technical college teaching which together account for between 40 and 50 per cent of the total requirement. Industry requires about 30 per cent and of the remainder the majority are required for Government Service.

7. In general, the requirements of industry are for two types of physicists:—

(i) A limited number of really good men is needed for original research. The shortage of men of this type whose interest lies in classical physics is particularly noticeable. It is recommended that university staffs should ensure that interest is aroused in all branches of physics and that classical physics is not neglected.

(ii) There is a larger demand for physicist-engineers —men with a physics degree, but who also have the practical outlook of the engineer and are keenly interested in applying their knowledge of physics to industrial problems. Men who wish to enter industry and have no special aptitude for original research should be encouraged to obtain additional training in some branch of engineering or technology. This training might well consist of a further year's course in the appropriate branch and arrangements should be made for grants to be available to men who take such a course. Alternatively, the training could take place in industry, in a form comparable with the graduate apprenticeship of an engineer although of shorter duration.

"The Efficient Use of Fuel"

The Ministry of Fuel and Power, Fuel Efficiency Branch, Queen Anne's Chambers, Dean Farrar Street, London, S.W.1, are proposing to undertake the revision of the book *The Efficient Use of Fuel*, first published in 1944.

The book expounds both the fundamental principles of fuel utilization and the operating methods necessary to obtain satisfactory results. Every care was taken to make it easily understandable and suitable for people of all types wishing to study the subject. To date 27 000 copies have been sold. The book has been translated into Spanish and has been reprinted in the U.S.A. It has without any doubt fulfilled a definite need, and it is probably true to say that the lack of such a book, giving immediate help in the day-to-day problems of fuel usage and the essential theory and groundwork on which permanent improvements must be based, contributed to the neglect of fuel efficiency by so many industries in the past. Comments or suggestions will be welcomed by the Ministry.

"*A mathematician may say anything he pleases but a physicist must be at least partially sane.*"

WILLARD GIBBS.

CONTRIBUTIONS FROM MEMBERS

Fluorescence for Fun

The use of fluorescent objects in decoration is so old that a tradition attributes it to a mediaeval Chinese artist, but the method could not become popular until sources of ultra-violet light better than sunlight became available and reasonably efficient. Window displays and stage effects with fluorescent objects have been increasingly common in the last two years, and this year Piccadilly Circus has offered a good example. In the Cirque Medrano in Paris a display by Liberty horses wearing white rope harness bearing a fluorescent pigment was a striking item this season; the ringmaster guided them, using a fluorescent whip and gloves, but was otherwise almost invisible. In this case the "black-light" lamps around the edge of the ring were mounted on the posts supporting the roof of the building.

The lamps used in Europe are commonly high-pressure mercury arcs, with filters of nickel-cobalt glass, and only about 1·3 per cent of the energy consumed by the lamp will emerge from the filter to stimulate the fluorescence. Recently American manufacturers have produced a tubular fluorescent lamp, in the powder lining of which extreme ultra-violet is transformed into near ultra-violet of a wave-length effective in exciting fluorescence but not dangerous to the human eye. These lamps have about six times the efficiency of the mercury arc lamp and filter combination.

This makes one wonder why all this is worth while: what is the matter with ordinary lights and pigments? Simple "personal preference" tests by a panel of observers in the U.S.A. show that if similar colour effects are produced by paints, and by fluorescent pigments, nearly everyone prefers the latter. The two designs were made to match in hue, but not, of course, in range of brightness.

This brightness range is the winning point, and a recent Dutch report on fluorescent pigments as an artistic medium points out that paintings as a rule can only simulate the brightnesses of a common scene with a compressed range, about 40 to 1 instead of the 100 or 1 000 to 1 of a well-lit interior scene. The distortion is similar to that of a gramophone record where the loudness range of an orchestral performance is compressed or reduced; no-one who has heard "Belshazzar's Feast" at the Albert Hall can be satisfied with a gramophone or radio reproduction. By the use of fluorescent pigments a brightness range of over 100 to 1 can be attained in a painting; this is as much more vivid than an ordinary water-colour painting as a lantern slide is than a photographic print.

Until paintings of this type have found the artists to make the best of them, and can be exhibited in galleries with their own lamps around them and a suitable dimmed ambient light it is uncertain whether we should appreciate the extra brightness range as a real contribution to aesthetics. However, it is well known to students of vision that extra brightness catches the eye, and the value of this sort of effect in advertising is predictable. Since fluorescent pigments can be incorporated into plastics, enamels, or even some ceramics, objects can be made whose brilliance is durable if they are properly lit. So far, I have never seen any such objects which were artistic, but this may yet come. Meanwhile, if we find our children receiving gifts of moulded objects which will glow in the dark, it is more important that we should be able to explain them than that they should be beautiful.

Refs.: *J. Opt. Soc. Amer.*, 1949, **39**, 663; *Philips Tech. Rev.*, 1949, **11**, 16.

E. VAN SOMEREN.

College Radio Transmitter

Mr. C. C. Evans (*Associate*), Head of the Department of Physics and Mathematics of the Glamorgan Technical College, Treforest, has obtained G.P.O. recognition of the College physics laboratory as an amateur transmitting station with call sign G.W.3.F.E.Z. Radio contact with other Colleges, on either morse or telephony, will be welcomed; it is proposed to transmit regularly at 5.30 p.m. on Wednesdays on frequencies: 3·5–3·8, 7·0–7·3, 14·0–14·4, 28·0–30·0 megacycles per second.

HONOURS AND APPOINTMENTS

Fellows

The following awards, elections and non-professional appointments have been announced:

C. B. Allsopp has been appointed Honorary Editor (Non-Medical) of the *British Journal of Radiology*.

Lord Halsbury has been appointed to the Advisory Council for Scientific Research, by the Lord President of the Council.

G. W. Scott Blair has been elected President of the British Rheologists' Club.

Sir George Thomson, F.R.S., has been awarded a Royal Medal of the Royal Society.

The following professional appointments have been notified:

C. A. Adams—Senior Principal Scientific Officer, Armament Research Establishment, Fort Halstead.

G. F. J. Garlick—Lecturer in Physics, University of Birmingham.

G. N. Peel—Chief Development Engineer, Associated Lead Manufacturers Ltd., Tynemouth.

G. V. Raynor—Professor of Metal Physics, University of Birmingham.

J. Rotblat—Professor of Physics, St. Bartholomew's Hospital Medical College, London.

R. H. Rowse—Director of Research, Smith & Wellstood Ltd., Bonnybridge, Stirlingshire.

G. I. Snow—Assistant Research Manager, Imperial Chemical Industries Ltd. (Paints Division), Slough.

R. S. Vincent—Research Manager, British Dielectric Research Ltd., London.

Associates

The following professional appointments have been notified:

L. J. L. Baillie—Senior Lecturer in Physics, Technical College, Darlington.

W. D. Corner—Lecturer in Physics, University of Durham.

W. G. Darvell—Head of the Department of Pure and Applied Physics, Royal Technical College, Salford.

H. D. Evans—Physicist, Royal Cancer Hospital, London.

H. Steeple—Lecturer in Physics, College of Technology, Manchester.

F. Tattersall—Education Officer (Science), Kenya, East Africa.

G. M. M. Thompson—Lecturer, Royal Military Academy, Sandhurst, Camberley.

THE REGISTER

ELECTIONS TO MEMBERSHIP

Fellows

*De Barr, Albert Edward, B.Sc., Research Superintendent, Guest, Keen & Nettlefold Research Laboratories, Wolverhampton.

*Garlick, George Frederick John, B.Sc., Ph.D., Research Physicist, University of Birmingham.

*Milner, Christopher John, M.A., Ph.D., Head of Physics Section, British Thomson-Houston Co. Ltd., Rugby.

Savic, Peter, Ph.D., Senior Scientific Officer, Naval Construction Research Establishment, Rosyth.

*Wells, Percival Arthur, M.Sc., M.A., Director of Education, International Wool Secretariat, London.

An asterisk (*) indicates transfer from Associateship.

Associates

Aitchison, Ronald E., M.Sc., Senior Lecturer, University of Sydney, Australia.

Benbow, John Jones, B.Sc., Junior Research Officer, British Cotton Industry Research Association, Manchester.

Brown, Cyril Simon, B.Sc., Physicist, Research Laboratories of the General Electric Co. Ltd., Wembley.

Carver, John Henry, M.Sc., Australian National University Scholar, University of Sydney, Australia.

Coleman, Jack Denis, B.Sc., Scientific Officer, Road Research Laboratory, Harmondsworth.

Długosz, Jozef, B.Sc., Research Assistant in Physics, University College, Dundee.

Elleman, Albert Julius, B.Sc., Ph.D., A.R.C.S., D.I.C., Research Physicist, Imperial Chemical Industries Ltd. (Paints Division), Slough.

Grant, Douglas Frank, B.Sc., Research Student, King's College, Newcastle-upon-Tyne.

Groom, Alan Clifford, B.Sc., Physicist, St. Mary's Hospital, London.

Jenkins, John Alexander, B.Sc., Research Physicist, British Jute Trade Research Association, Dundee.

Perrin Jones, Mrs. D. (*née* Stuckes, Audrey Doris), B.A., Research Physicist, Metropolitan-Vickers Electrical Co. Ltd., Manchester.

Lawley, Leonard Edward, B.Sc., Lecturer in Physics, King's College, Newcastle-upon-Tyne.

Mair, William Norman, B.Sc., Scientific Officer, Royal Aircraft Establishment, Farnborough.

Myers, William Ronald, M.Sc., Lecturer in Physics, University College, Southampton.

Sale, Antony John Hanson, M.A., Technical Assistant, Dowty Equipment Ltd., Cheltenham.

Salmon, Alan James, B.Sc., Research Physicist, Associated Electrical Industries Ltd., Aldermaston, Berkshire.

Shephard, Ronald William, M.A., Scientific Officer, Armament Research Establishment, Woolwich.

Smith, Thomas, B.Sc., Ph.D., Research Student, University of Leeds.

Swindlehurst, Eric, B.Sc., Research Student, University of Leeds.

Teale, Roger, M.A., Development Engineer, Duralite Ltd., Spennymoor, Co. Durham.

Waddington, Arthur Frank, B.Sc., Research Physicist, Ferranti Ltd., Edinburgh.

Graduates

Aird, John Hamilton, B.Sc., Research Physicist, Elliot Brothers (London) Ltd., Borehamwood.

Baxter, Gilbert Arthur, B.Sc., Research Student, College of Technology, Manchester.

Bayley, Stanley Thomas, B.Sc., Research Assistant, King's College, London.

Bell, Joseph Charles, B.Sc., Physicist, De Havilland Engine Co. Ltd., Edgware.

Billing, Joan Florence, B.Sc., Assistant Experimental Officer, Atomic Energy Research Establishment, Harwell.

Bluhm, Max Michael, B.Sc., Research Assistant, Imperial College of Science and Technology, London.

Bones, Roger Alec, B.Sc., Student, University College, London.

Boud, Alan Hugh, B.Sc., Scientific Officer, British Insulated Callender's Cables Ltd., London.

Box, Derrick Stanley, B.Sc., Physicist, Radiochemical Centre, Amersham, Buckinghamshire.

Brown, Eric Stanley, B.Sc., Royal Air Force.

Cane, David George, B.Sc., Chief Assistant to Supervisor of Instrumentation, Seismograph Service Ltd., London.

Collier, William Marshall, B.Sc., Physicist, Dorman Long and Co., Ltd., Middlesbrough.

Cross, Anthony Stuart, B.Sc., Research Physicist, Kodak Ltd., Wealdstone.

Davies, Kenneth, B.Sc., Research Student, University College of Swansea.

Dawton, Derek Ian, B.Sc., Research Student, University of Manchester.

Elson, David William, B.Sc., Physicist, Research Laboratories of the General Electric Co. Ltd., Wembley.

Garrett, Eric Lionel, B.Sc., Junior Physicist, British Thomson-Houston Co. Ltd., Rugby.

Gay, Peter, B.A., Research Student, Cavendish Laboratory, Cambridge.

Harries, Wynford Lewis, B.Sc., Research Student, University of Oxford.

Hay, James Sutherland, B.Sc., Scientific Officer, Meteorological Office, Dunfermline, Fife.

Haywood, John Hudson, B.Sc., Research Student, University of Manchester.

Hookway, Dennis Campbell, B.Sc., Research Physicist, Dunlop Rubber Co., Ltd., Fort Dunlop, Erdington, Birmingham.

Howells, Eric Reginald, B.Sc., Research Student, Cavendish Laboratory, Cambridge.

Jones, Idris, B.Sc., Physicist, Appleby Frodingham Steel Works, Scunthorpe.

Jones, Renalt Hill, B.Sc., Research Student, University College of Swansea.

Kahan, David Wolfe, B.A., B.Sc., Junior Radio Engineer, Edison Swan Electric Co. Ltd., London.

Legge, Ivo Keith Byshe, B.Sc., Research Laboratories of the General Electric Co. Ltd., Wembley.

Lindop, Tony William, B.Sc., Development Physicist, W. Edwards & Co. (London) Ltd., London.

Lock, William Owen, B.Sc., Research Student, University of Bristol.
Low, John William, M.A., B.Sc., Science Teacher, Eastwood Secondary School, Clarkston, Renfrewshire.
Marsh, Kenneth John, B.Sc., Research Bursar, British Non-Ferrous Metals Research Association, London.
Massey, John Barlow, B.Sc., Assistant Physicist, Christie Hospital & Holt Radium Institute, Manchester.
Matthews, William Douglas, B.Sc., Research Physicist, Babcock & Wilcox Ltd., Renfrew.
Naismith, Keith, B.Sc., Physicist, Dunlop Rubber Co. Ltd., Manchester.
Nelson, Kenneth, B.Sc., Technical Officer, Imperial Chemical Industries Ltd. (General Chemicals Division), Manchester.
Ogilvie, Keith William, B.Sc., Research Student, University of Edinburgh.
Roberts, David Ambrose Edward, B.Sc., Physicist, Research Laboratories of the General Electric Co. Ltd., Wembley.
Rooke, Joan Marion, B.Sc., Junior Physicist, Metropolitan-Vickers Electrical Co. Ltd., Manchester.
Sawkill, John, B.Sc., Research Student, King's College, Newcastle-upon-Tyne.
Seddon, Patrick Walsh, B.Sc., Research Physicist, Metal Box Co. Ltd., London.
Smith, Edna Mary, B.A., Assistant Experimental Officer, Royal Aircraft Establishment, Farnborough.
Taylor, Gordon William, B.Sc., A.R.C.S., Research Student, Royal College of Science, London.
Thomas, John Orion, B.Sc., Research Student, University College of Swansea.
Vernon, Edward Victor, B.Sc., Research Student, University College, Southampton.
Wall, Frederick John Beasley, B.Sc., Assistant Physicist, Ilford Ltd., Brentwood.
Waters, Geoffrey, B.Sc., Physicist, Research Laboratories of the General Electric Co. Ltd., Wembley.
Watson, Arthur Francis, B.Sc., Physicist, Morgan Crucible Co. Ltd., London.
Williams, William Malcolm, B.Sc., Research Bursar, British Non-Ferrous Metals Research Association, London.
Wilson, Ronald John, B.Sc., Research Student, South-West Essex Technical College, Walthamstow.
Wood, Philip, B.Sc., Junior Physicist, Metropolitan-Vickers Electrical Co. Ltd., Manchester.
Woolner, Anthony Frank, B.A., Instrument Manager, Imperial Chemical Industries Ltd. (Alkali Division), Northwich.

Subscribers

Anderson, W., A.R.I.C., Glasgow.
Barclay, F. J., Glasgow.
Burgess, H. H., New Malden, Surrey.
Davidson, J., M.P.S., Coatbridge, Lanarkshire.
Elwell, L. E., Lieut. (R.N.), Crowborough.
Forrest, D. B., Hamilton, Lanarkshire.
Foster, W. W., B.Sc., Widnes.
Gould, I., Windsor.
Juby, S. H., Letchworth.
Kellenberger, E., Geneva.
Lawrenson, R. H., Glasgow.
Leigh-Dugmore, C. H., B.Sc., Sutton Coldfield.
Lowe, J., Glasgow.
McGirr, E. M., B.Sc., M.B., Ch.B., F.R.F.P.S., M.R.C.P., Glasgow.
Mickleburgh, W. E., B.Sc., Slough.
Morrison, R. R., M.B., Ch.B., Glasgow.
Munn, D., Glasgow.
McNeill, M., B.Sc., Glasgow.
Ritchie, D. S., B.A., Glasgow.
Robertson, M. J., Glasgow.
Thurston, H. G., Kettering.
Wilson, H. C., Glasgow.
Wilson, T., M.B., Ch.B., Glasgow.

Students

Adams, Harold Walter, Imperial Chemical Industries Ltd. (Paints Division), Slough.
Baker, Thomas Wilfred, University of Manchester.
Boyle, Hugh McFadyen, University of Glasgow.
Britton, Robert, University of Glasgow.
Burger, Willem, University College of Swansea.
Burgess, Boyd, University College of Swansea.
Burns, James Cameron, University of Glasgow.
Byford, Gordon Holt, Northampton Polytechnic, London.
Caldwell, John Henry, University of Sydney, Australia.
Davies, David Aylwin, University College of Swansea.
Davies, James Lewis, University College of Swansea.
Deuchars, William McKirdy, University of Glasgow.
Doram, Colin Carrington, University College, Hull.
Drever, Ronald William Prest, University of Glasgow.
Duckworth, George, Loughborough College.
Ellingham, Neil, University of Glasgow.
Evans, Glyn, University College of Swansea.
Evans, Graham, University College of Swansea.
Evans, Trevor, University College of Swansea.
Ferrie, Ruth Janet, University of Glasgow.
Fraser, James Alexander, University of Glasgow.
Forrest, Samuel Norris, University of Glasgow.
Gaffee, David Ian, The Polytechnic, Regent Street, London.
Garven, Mary Selkirk, University of Glasgow.
Gillespie, Edward John, University of Glasgow.
Godsall, Ruth Mary, University College of Swansea.
Green, John Ernest Jeffrey, King's College, London.
Helyar, Kenneth John, University College of Swansea.
Herzenstein, Max, University College, Hull.
Humphreys, Peter, Woolwich Polytechnic, London.
Hurlbut, Alan Leslie, University College of Swansea.
James, David Ivan, University College of Swansea.
James, William Arthur, University College of Swansea.
Jenkins, Conrad Geoffrey, University College of Swansea.
Jones, Clive Righton, University College of Swansea.
King, Leonard Tony, Chelsea Polytechnic, London.
Laird, Helen Mary, University of Glasgow.
Lancaster, James William, Blackburn Technical College.
Leventhall, Hubert Geoffrey, University College, Hull.
Lewis, Ioan David, University College of Swansea.
Lewis, Morgan Selwyn, University College of Swansea.
Macdonald, John, University of Glasgow.
Macrae, Thomas Perry, University of Manchester.
Maidment, Clifford Tom, Northern Polytechnic, London.
Mason, Ronald, University College, Cardiff.
Miles, Howard Thomas, University College of Swansea.
Millard, Gerald Hilton, University of Manchester.
Millwood, Cyril James Clifford, Battersea Polytechnic, London.
Milne, George Foote, University of Glasgow.
Mitchell, Cyril, University of Glasgow.
Murdoch, Peter Andrew Borland, University of Glasgow.
Murray, Cyril Thomas, University of Sydney, Australia.
Nicol, Isobel Jean, University of Glasgow.
Parkyn, David Moseley, University College of Swansea.
Penhale, Leighton George, University College of Swansea.
Powis, Thomas Stanley, University College of Swansea.
Primrose, Robert MacArthur Allan, University of Glasgow.
Raeburn, John, University of Glasgow.
Rees, Griffith Darrel, University College of Swansea.
Robb, Henry Cowan, University of Glasgow.
Roch, Desmond Gerald, University College of Swansea.
Rodger, Thomas, University of Glasgow.
Ross, George, University of Glasgow.
Scholefield, Peter Henry Romans, University of Manchester.
Shaw, Alexander Robertson, University of Glasgow.
Sheard, Ronald Percival, University of Queensland, Australia.
Stoodley, Keith David Charles, University of Glasgow.
Summers, Annie Elizabeth, University of Glasgow.
Taylor, Endaf Davies, University College, Cardiff.
Thomas, Lancelot, University College of Swansea.
Townsend, William Godfrey, University College of Swansea.
Tyrwhitt Walker, Gavern Thomas Goldeny, Chelsea Polytechnic, London.
Wallace, Arthur Andrew, University of Glasgow.
Warnock, Robert Wallace Robertson, University of Glasgow.
Waters, Ronald Thomas, University College of Swansea.
Watt, David Edwin, University of Glasgow.
Whitlock, Walter Sidney, University of Durham.
Williams, Godfrey James, University College of Swansea.
Wilson, Jeffery Howell, University College of Swansea.
Wishart, William, University of Glasgow.

APPOINTMENTS VACANT

Available only to applicants excepted from the Control of Engagement Order, 1947, No. 2021, unless the situation is also excepted.

The inclusion of particulars of a vacancy must not be taken to imply that the Institute necessarily approves of the terms offered or that might be offered. Candidates should satisfy themselves that these are satisfactory, and they may always refer to the Institute for advice. A suggested form of contract under which a qualified physicist might reasonably be expected to serve is available on request.

Acoustic Physicist required by established London Company for technical sales development with medical profession on science of hearing. Extremely interesting and satisfying work. Qualifications are extensive knowledge of acoustics and electronic theory, some practical experience. Good appearance and personality, business ability, energy. Age 25–35 and capable of earning a salary of £750 p.a. minimum. Applications to Box No. A.V.1, The Institute of Physics, 47 Belgrave Square, S.W.1.

Imperial Chemical Industries, Ltd., Dyestuffs Division, have a vacancy for a young honours graduate physicist or engineer to assist in the development of instruments and automatic control apparatus for chemical plant. The work may involve any type of physical measurement used industrially, but some knowledge of electronics would be advantageous. The location of the laboratory is in Manchester, but it may occasionally be necessary to visit works in other districts. Salary according to qualifications and experience. Applications in writing to Staff Dept., Hexagon House, Blackley, Manchester 9, Ref. D20.

Physicist, with experience of electronics, preferably as applied to instruments, required for research and development work calling for initiative and creative ability. Apply giving details of education and experience and stating salary required to Research Department, Cambridge Instrument Co., Ltd., Cambridge.

The British Boot, Shoe, and Allied Trades Research Association require an understudy to the physicist-in-charge of a laboratory dealing with consulting work on the physical properties of shoes and shoe materials. A good degree, practical ability and a gift for organizing are required. Training will be given in the technology of the industry. This is a good opening, with prospects of advancement, for a young man of about 25 years. Superannuation under F.S.S.U. Full particulars on application to the Director, Satra House, Rockingham Road, Kettering.

British Non-Ferrous Metals Research Association has a vacancy for a physicist to work on spectrographic analysis of metals. Duties will include research on the direct recording of spectra, using multiplier photocells and a detailed study of the discharge between metallic electrodes. Candidates should preferably have a good Honours degree in physics and research experience. Familiarity with spectrographic techniques would be an advantage. Commencing salary according to qualifications and experience. Apply to Secretary, B.N.F.M.R.A., 81–91, Euston Street, N.W.1.

Ferranti Limited have vacancies in their Radio Works, Moston, Manchester, for Physicists and Engineers for Research and Development work on vacuum-filled electronic devices as follows:

(*a*) Senior Development Engineers. Qualifications include a good degree in Physics or Electrical Engineering and extensive experience in a responsible capacity in the electronics field.

(*b*) Development Engineers. Qualifications include a degree in Physics or Electrical Engineering or suitable extensive experience in electronics.

Salary on a liberal basis, according to qualifications and experience.

The Company has a Staff Pension Scheme.

Application forms from the Staff Manager, Ferranti Ltd., Hollinwood, Lancs.

Applications are invited from persons qualified by training and experience for the position of Lecturer in Charge, Department of Mathematics and Physics, Perth Technical College, Western Australia.

Qualifications

University Degree with Honours in Physics or Mathematics or an equivalent qualification. Applicants should have had experience in an industrial laboratory or in a teaching department specializing in Applied Physics.

Present Salary Range

£880–935 p.a., by four annual increments, with Basic Wage Adjustments.

The successful applicant will be required to take charge of the Department and will be responsible for the organization and development of courses of Applied Science.

Further particulars relating to qualifications required, opportunities for promotion, etc., may be obtained from the undersigned, to whom all applications, giving date of birth, general and technical qualifications, teaching experience, war service (if any), should be addressed. Latest date for receipt of applications, January 31st, 1950.

W. G. Hayman,

Superintendent of Technical Education, Technical College, St. George's Terrace, Perth, Western Australia.

Ilford Limited Research Laboratories, at Brentwood, Essex, require Graduate in Physics for work on the optical properties of photographic materials. Age up to 30. An interest in instrument design, photometry or chemistry would be an advantage. Salary according to age and experience. Write, stating age, qualifications, etc., to Research Director, Ilford Limited, Ilford, Essex.

British Electricity Authority

Applications are invited for appointments on the Scientific Staff of the Chief Engineer's Department in the Research Laboratories at Leatherhead.

Candidates should possess a University degree with 1st or 2nd Class Honours in electrical engineering *or physics,* and preference will be given to those with some research experience.

Duties will include testing, development and research work in the Laboratories and in the field in connection with the generation, transmission and distribution of electricity.

Appointments will be made within the following salary scales, which are provisional until final scales have been negotiated with the appropriate organizations, in accordance with age, qualifications and experience.

General Assistant, £444 18s. × £26 5s.—£576 3s. p.a.
Third Assistant, £628 13s. × £26 5s.—£759 18s. p.a.
Second Assistant, £707 8s. × £52 10s.—£969 18s. p.a.

Application forms may be obtained from D. Moffat, Director of Establishments, British Electricity Authority, British Electricity House, Great Portland Street, London, W.1., and should be completed and returned to him not later than 20th January, 1950. Please quote reference "A.E. 41."

Solus-Schall Ltd., Manufacturers of X-ray and Gamma-ray equipment require a physicist aged 25–30 as deputy to the Senior Industrial Radiologist. A knowledge of all kinds of X-ray and Gamma-ray work is desirable. The post is progressive with good prospects. Commencing salary not less than £600. Apply to the Secretary of the company, 39*a* Welbeck Street, London, W.1, as soon as possible.

The Research Association of British Rubber Manufacturers has vacancies for research physicists. Applicants must have an Honours Degree in Physics, and for the more senior posts, post-graduate research experience and ability to initiate and direct research projects are required. Appointments will be on a scale £500 × 25—£625, or £675 × 25—£875, the starting salary depending on age and experience. Superannuation under F.S.S.U. Apply with full particulars to The Secretary, R.A.B.R.M., 105, Lansdowne Road, Croydon.

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